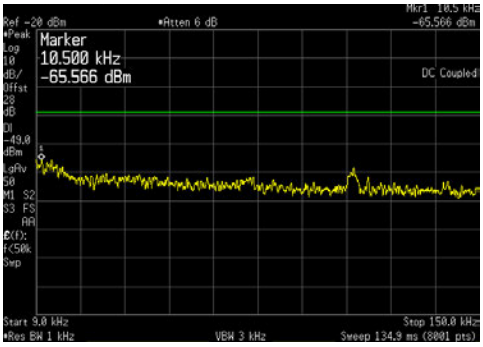
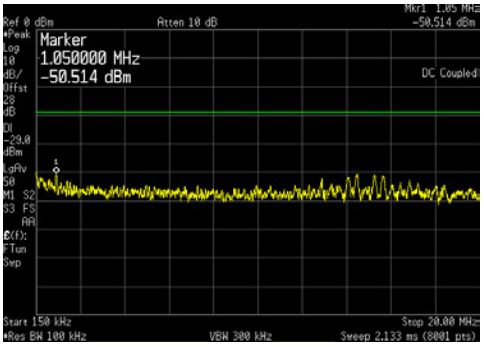
LTE20 Channel Bandwidth _ 16QAM _ Middle Channel (2145MHz) at 40 watts/carrier:

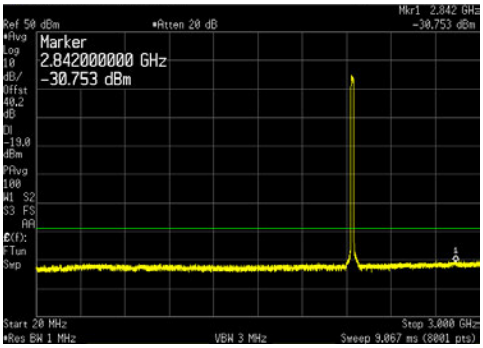
9kHz to 150kHz



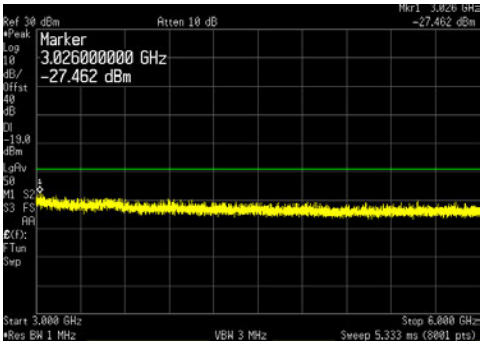
150kHz to 20MHz



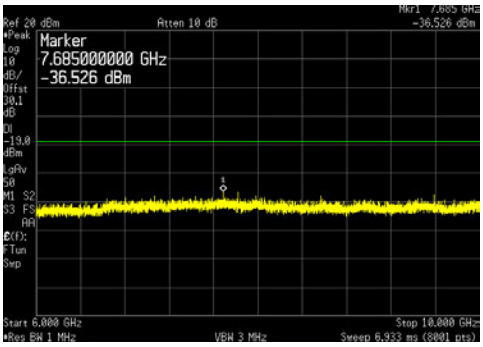
20MHz to 3GHz



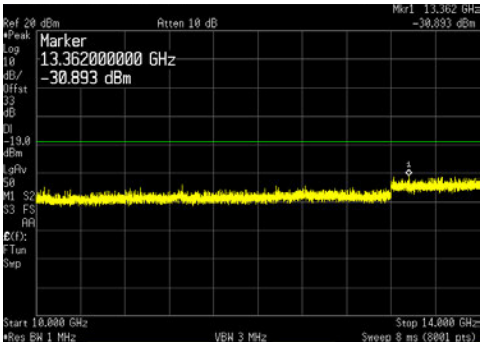
3GHz to 6GHz



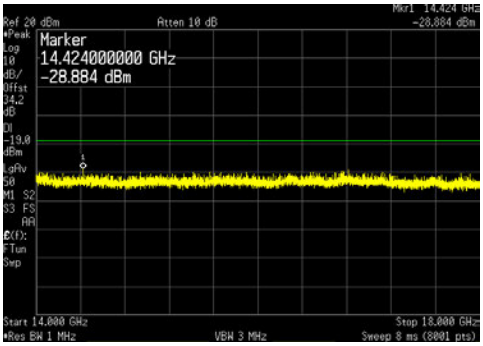
6GHz to 10GHz



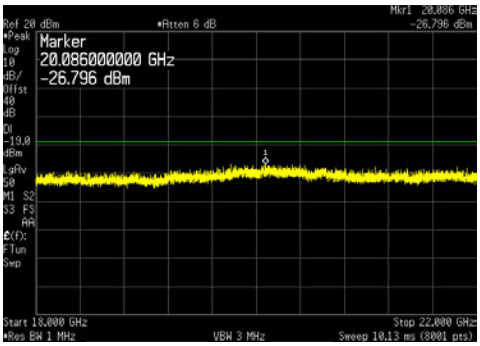
10GHz to 14GHz



14GHz to 18GHz

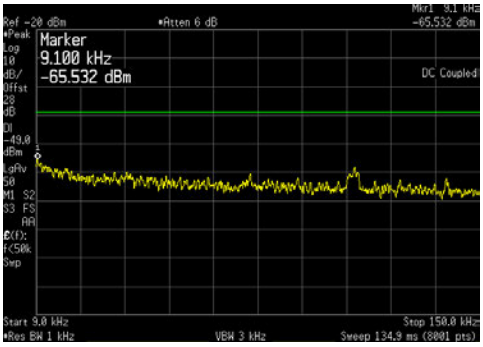


18GHz to 22GHz

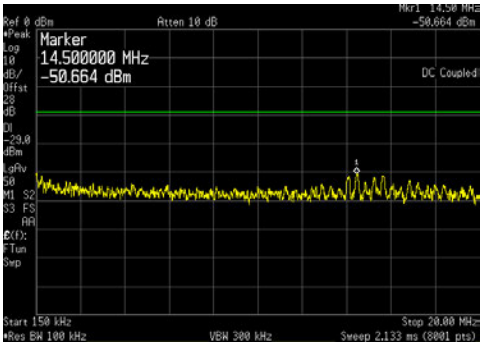


LTE20 Channel Bandwidth _ 64QAM _ Middle Channel (2145MHz) at 40 watts/carrier:

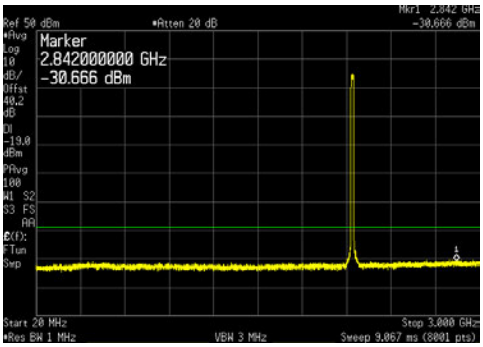
9kHz to 150kHz



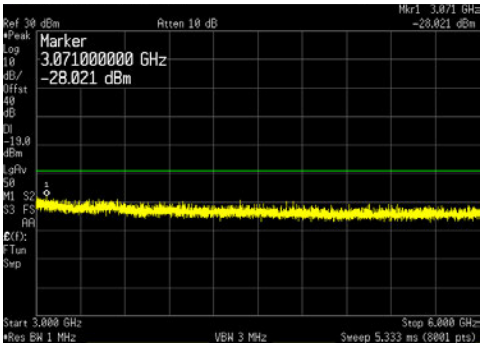
150kHz to 20MHz



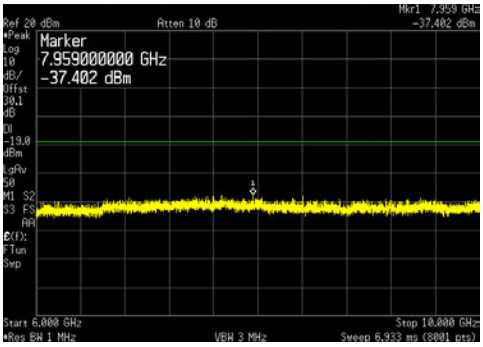
20MHz to 3GHz



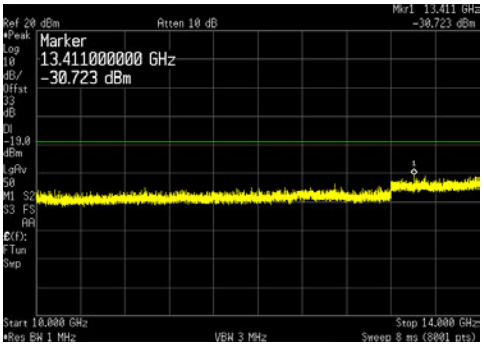
3GHz to 6GHz



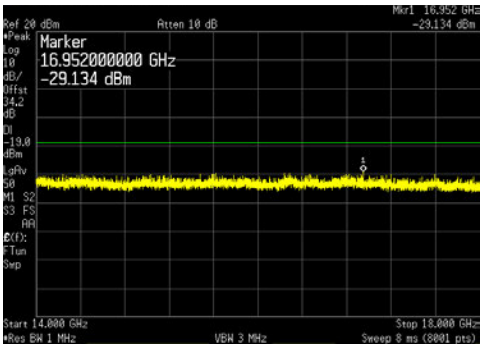
6GHz to 10GHz



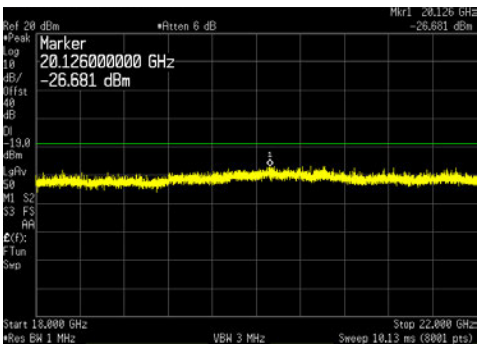
10GHz to 14GHz



14GHz to 18GHz

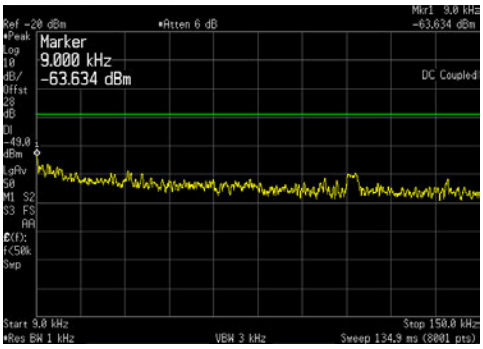


18GHz to 22GHz

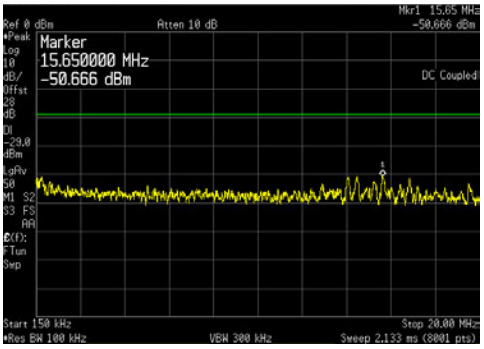


LTE20 Channel Bandwidth _ 256QAM _ Middle Channel (2145MHz) at 40 watts/carrier:

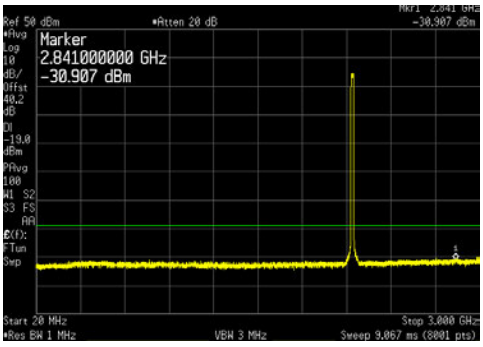
9kHz to 150kHz



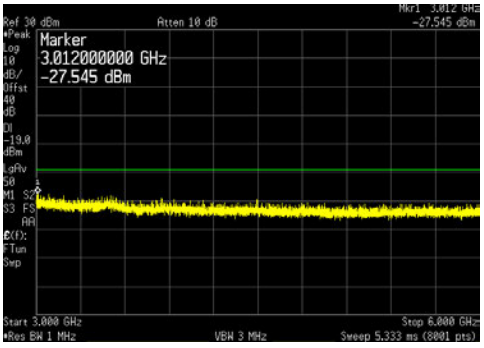
150kHz to 20MHz



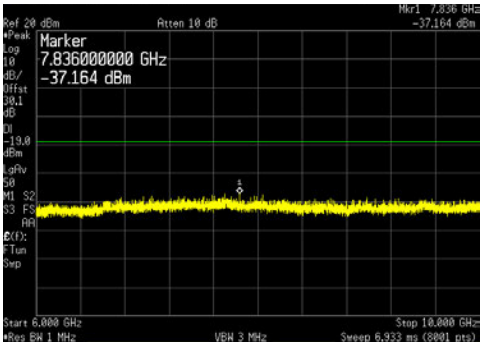
20MHz to 3GHz



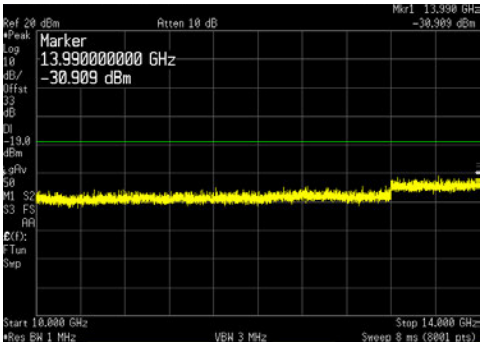
3GHz to 6GHz



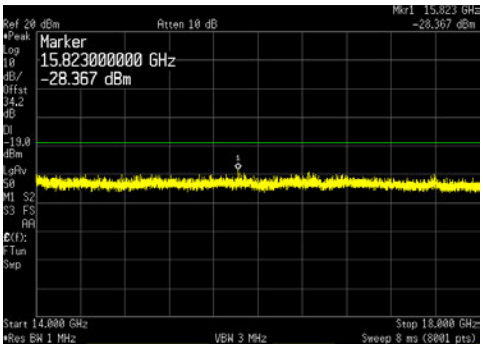
6GHz to 10GHz



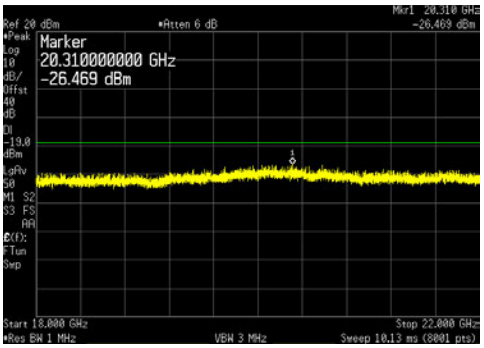
10GHz to 14GHz



14GHz to 18GHz



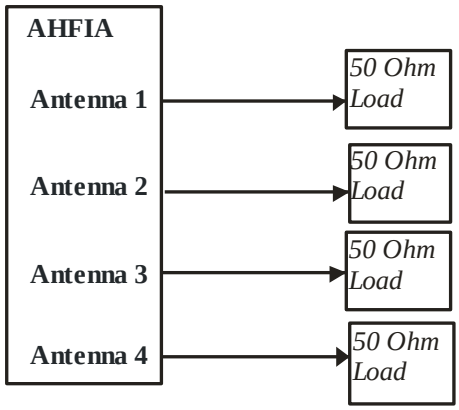
18GHz to 22GHz



Conducted spurious emission plots/measurement results for the second test with the 3GPP Band 25 and the 3GPP Band 66 transmitters enabled simultaneously at 20 watts per carrier (or 40 watts/antenna port) are in Appendix A.

Transmitter Radiated Spurious Emissions

During radiated emission testing all antenna ports of the base station were terminated with 50ohm termination blocks as shown in the diagram below.



Based on antenna port conducted spurious emissions tests results, preliminary scans for radiated spurious emissions were performed in 30MHz – 22GHz frequency range. Two test configurations are needed for AWS radiated spurious emission measurements. The first test will be with the 3GPP Band 66 transmitters enabled at 40 watts per carrier (the 3GPP Band 25 transmitters will not be enabled). The second test will be with the 3GPP Band 25 and the 3GPP Band 66 transmitters enabled simultaneously at 20 watts per carrier (or 40 watts/antenna port). The results of the second test are in Appendix A.

The test includes channel bandwidth with the highest spectral density (LTE5) for both frequency bands. The bottom, middle and top frequency channels for each band were enabled. The carrier configurations for the radiated emission testing are provided below. Final maximized radiated emissions were measured in these modes.

Frequency Band	Ant Port	RF BW	EARFCN	Transmit Frequency	Carrier Power
AWS	1	5 MHz	66461 (Bottom Channel)	2112.5 MHz	40 Watts
AWS	2	5 MHz	66786 (Middle Channel)	2145.0 MHz	40 Watts
AWS	3	5 MHz	66786 (Middle Channel)	2145.0 MHz	40 Watts
AWS	4	5 MHz	67111 (Top Channel)	2177.5 MHz	40 Watts

AHFIA AWS Carriers Enabled at Maximum Power (PCS Carriers Off)

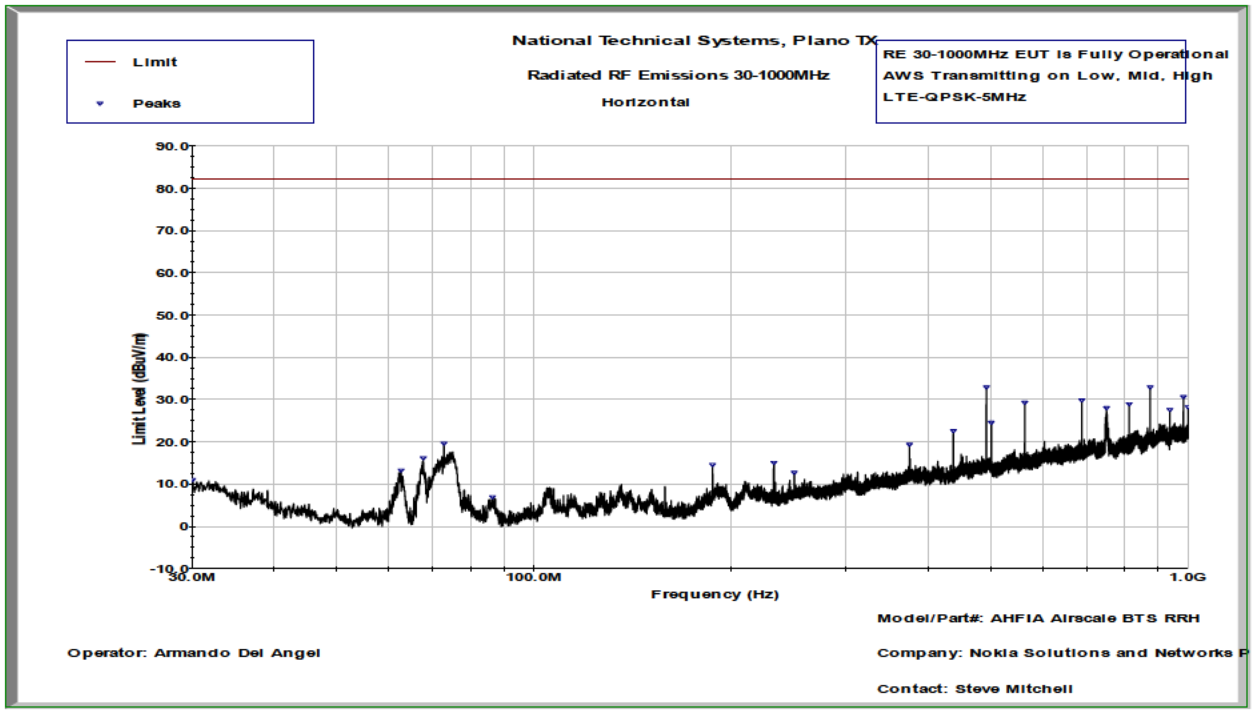
Frequency Band	Ant Port	RF BW	EARFCN	Transmit Frequency	Carrier Power
PCS	1	5 MHz	8065 (Bottom Channel)	1932.5 MHz	20 Watts
PCS	2	5 MHz	8365 (Middle Channel)	1962.5 MHz	20 Watts
PCS	3	5 MHz	8365 (Middle Channel)	1962.5 MHz	20 Watts
PCS	4	5 MHz	8665 (Top Channel)	1992.5 MHz	20 Watts
AWS	1	5 MHz	66461 (Bottom Channel)	2112.5 MHz	20 Watts
AWS	2	5 MHz	66786 (Middle Channel)	2145.0 MHz	20 Watts
AWS	3	5 MHz	66786 (Middle Channel)	2145.0 MHz	20 Watts
AWS	4	5 MHz	67111 (Top Channel)	2177.5 MHz	20 Watts

PCS & AWS Carriers Enabled Simultaneously at Maximum Power

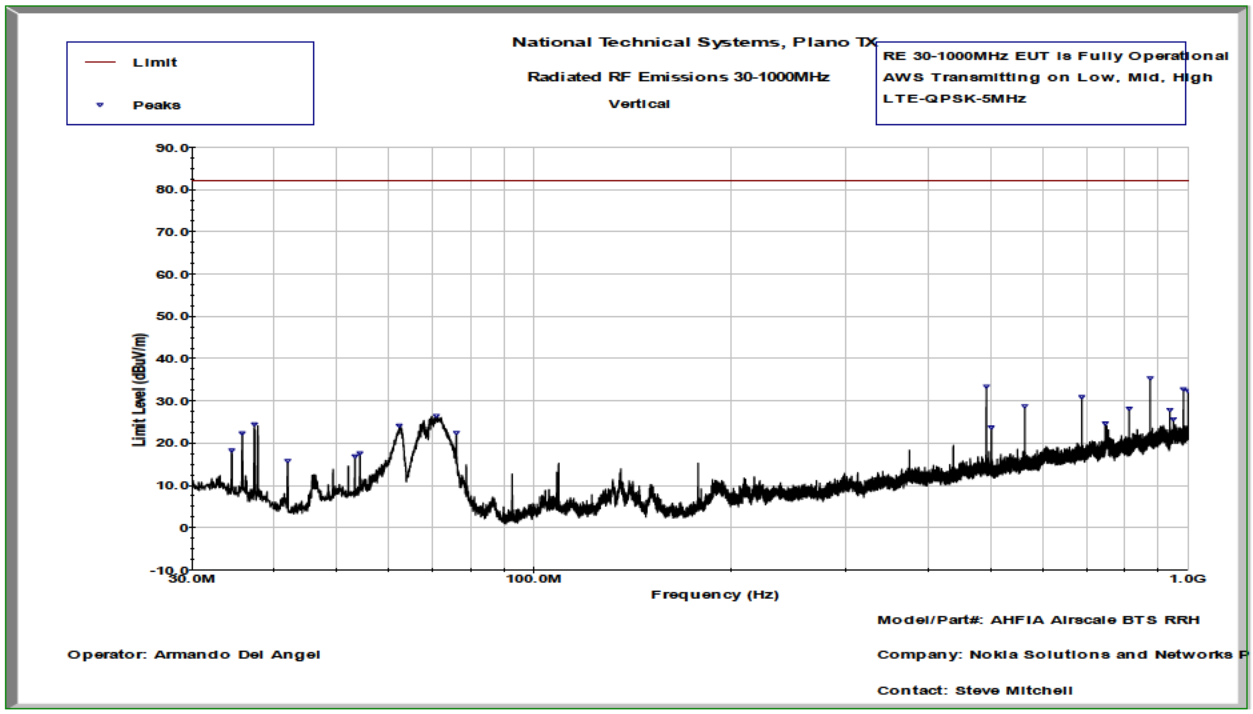
RE Data for AWS Carriers Enabled (PCS Carriers Off)

Frequency	Polarity	Peaks Raw	Antenna	Pre Amp	Cables	Peaks	Limit	Margin	Tower	Turntable
MHz	H/V	dBuV/m	dB	dB	dB	dBuV/m	dBuV/m	dB	cm	Degrees
17749.800	V	32.827	45.377	-28.697	6.775	56.282	91.7	-35.418	100	359
8847.300	H	32.171	37.796	-31.361	7.747	46.353	82.2	-35.847	200	190
17750.900	H	32.286	45.382	-28.698	6.776	55.746	91.7	-35.954	100	359
9830.590	V	28.845	38.124	-31.75	7.724	42.942	82.2	-39.258	100	190
17695.800	H	28.208	45.121	-28.69	6.75	51.389	91.7	-40.311	100	359
8847.130	V	26.633	37.796	-31.361	7.746	40.814	82.2	-41.386	100	190
17999.100	V	25.766	46.542	-28.923	6.856	50.241	91.7	-41.459	100	359
4224.980	V	34.513	32.083	-31.948	4.354	39.002	82.2	-43.198	100	190
4290.730	V	33.575	32.105	-32.039	4.833	38.474	82.2	-43.726	100	190
4352.990	V	33.516	32.104	-32.205	4.972	38.387	82.2	-43.813	100	190
17692.900	V	22.523	45.1	-28.69	6.75	45.683	91.7	-46.017	100	359
13761.100	V	26.861	41.515	-29.348	6.05	45.077	91.7	-46.623	100	359
18001.400	H	26.489	44.872	-28.917	2.5	44.944	91.7	-46.756	100	359
875.002	V	46.021	23	-37.066	3.365	35.319	82.2	-46.881	120	209
2949.080	V	35.177	29.587	-33.732	4.173	35.202	82.2	-46.998	100	190
12780.100	V	29.079	40.07	-29.997	5.109	44.261	91.7	-47.439	100	359
4288.450	H	29.141	32.104	-32.033	4.817	34.029	82.2	-48.171	200	190
13763.000	H	25.096	41.515	-29.353	6.052	43.309	91.7	-48.391	100	359
491.525	V	50.804	18.331	-37.537	1.755	33.351	82.2	-48.849	133	207
874.998	H	43.575	23	-37.066	3.365	32.872	82.2	-49.328	145	118
491.522	H	50.314	18.331	-37.537	1.755	32.861	82.2	-49.339	146	44
12779.500	H	27.02	40.068	-29.997	5.109	42.2	91.7	-49.5	100	359
4226.160	H	27.362	32.084	-31.947	4.363	31.861	82.2	-50.339	200	190
4354.830	H	25.978	32.104	-32.21	4.974	30.847	82.2	-51.353	200.1	190
687.487	V	44.169	21.6	-37.203	2.228	30.793	82.2	-51.407	100	359
9831.230	H	15.97	38.125	-31.747	7.726	30.074	82.2	-52.126	200	190
687.489	H	43.074	21.6	-37.203	2.228	29.697	82.2	-52.503	100	191
562.506	H	45.424	19.15	-37.359	1.898	29.112	82.2	-53.088	137	231
812.493	H	40.802	22.35	-37.13	2.806	28.828	82.2	-53.372	112	18

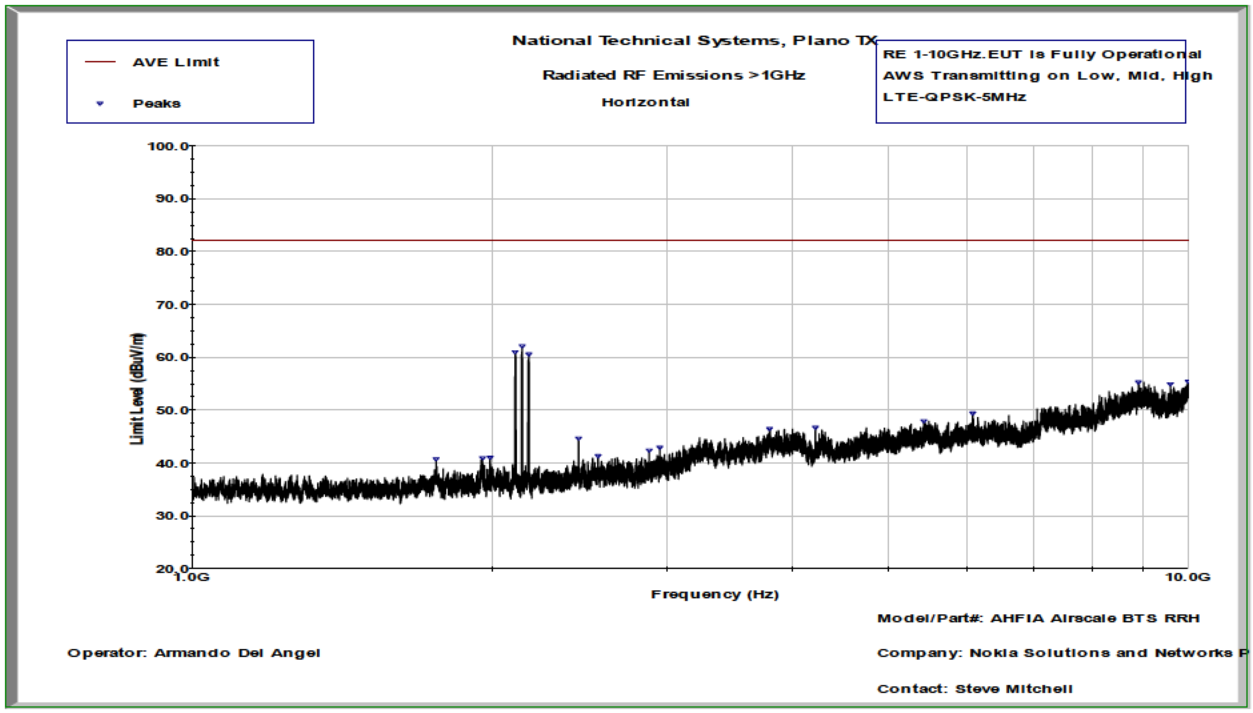
A three meter measurement distance was used for radiated emission less than 10GHz. A one meter measurement distance was used for radiated emission greater than 10GHz. The highest radiated emissions detected were more than 20dB below the three meter limit of 82.2dBuV/m and the one meter limit of 91.7dBuV/m (equivalent to -13dBm EIRP). Since all maximized measurements were more than 20dB below these levels, substitution measurements were not performed. TILE software was used for all preliminary scans and plots that are included on the following pages.



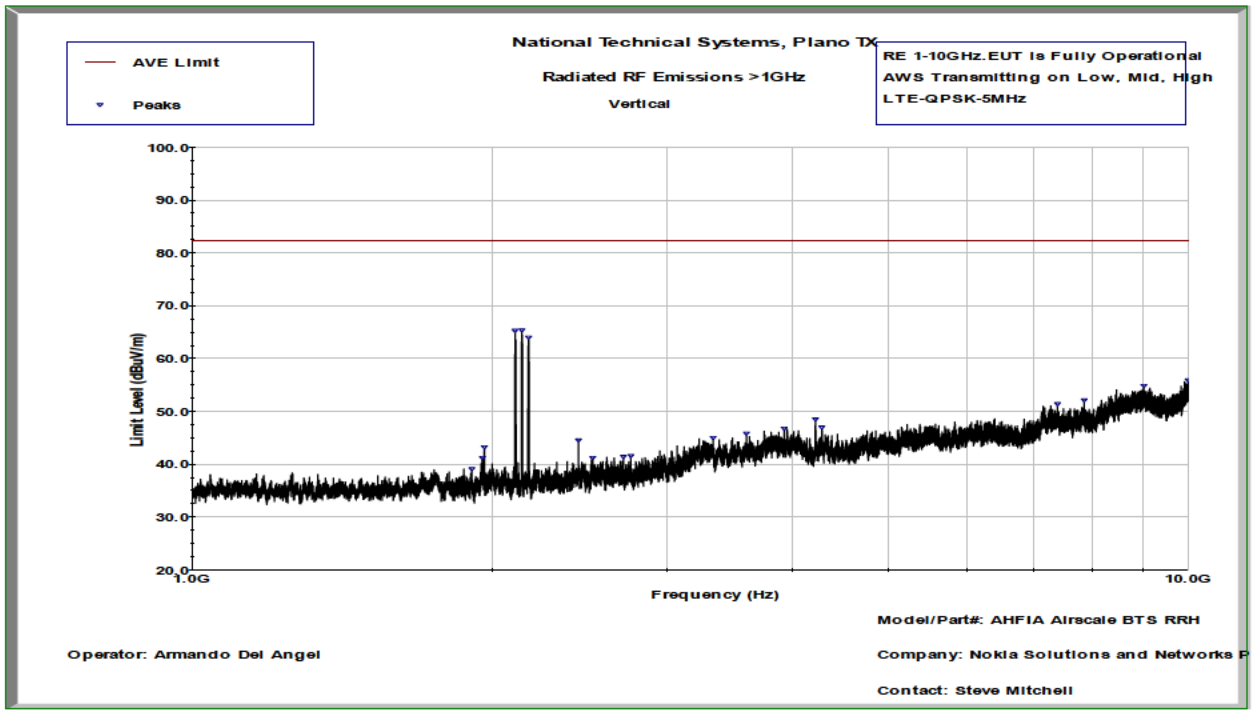
AWS Carriers 30-1000MHz – Horizontal at 3m



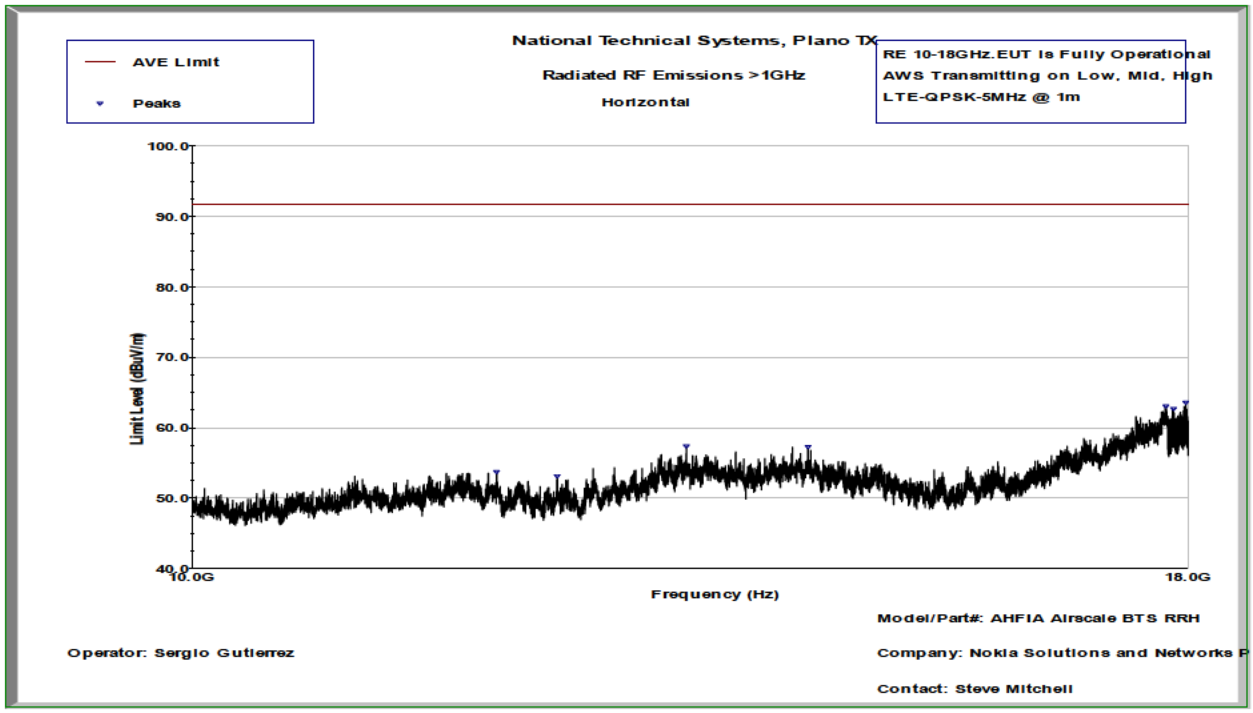
AWS Carriers 30-1000MHz – Vertical at 3m



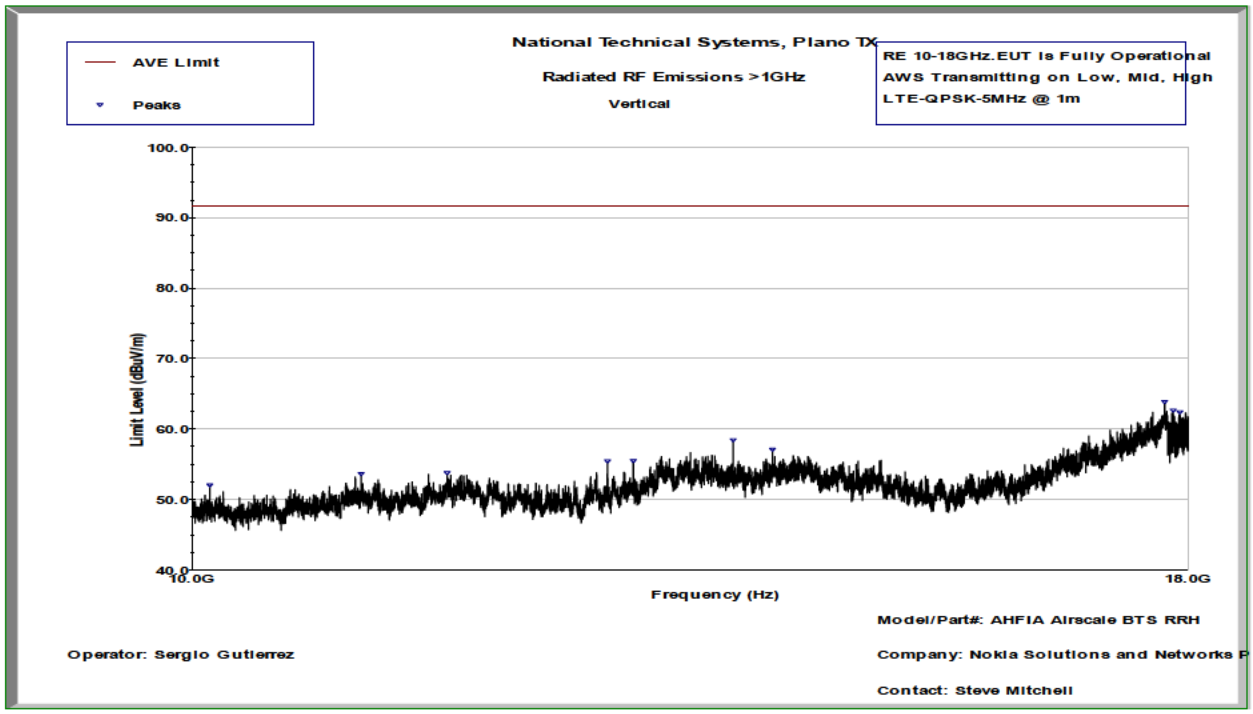
AWS Carriers 1-10GHz – Horizontal at 3m



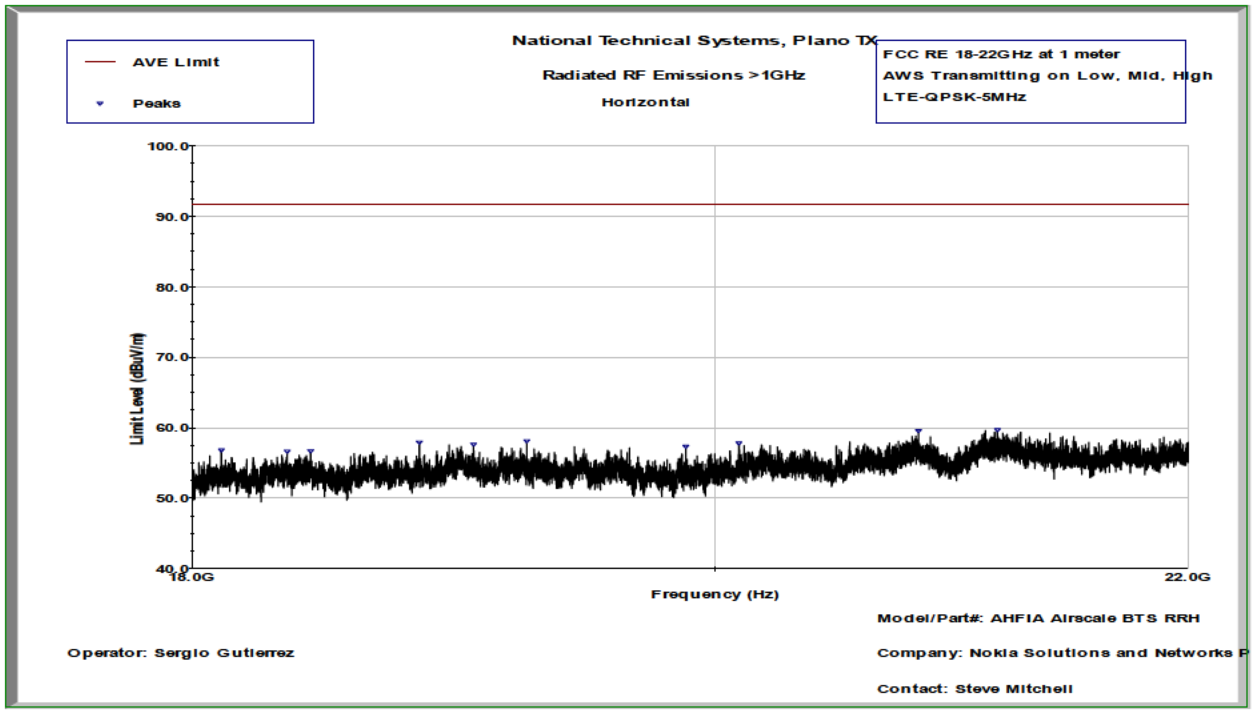
AWS Carriers 1-10GHz – Vertical at 3m



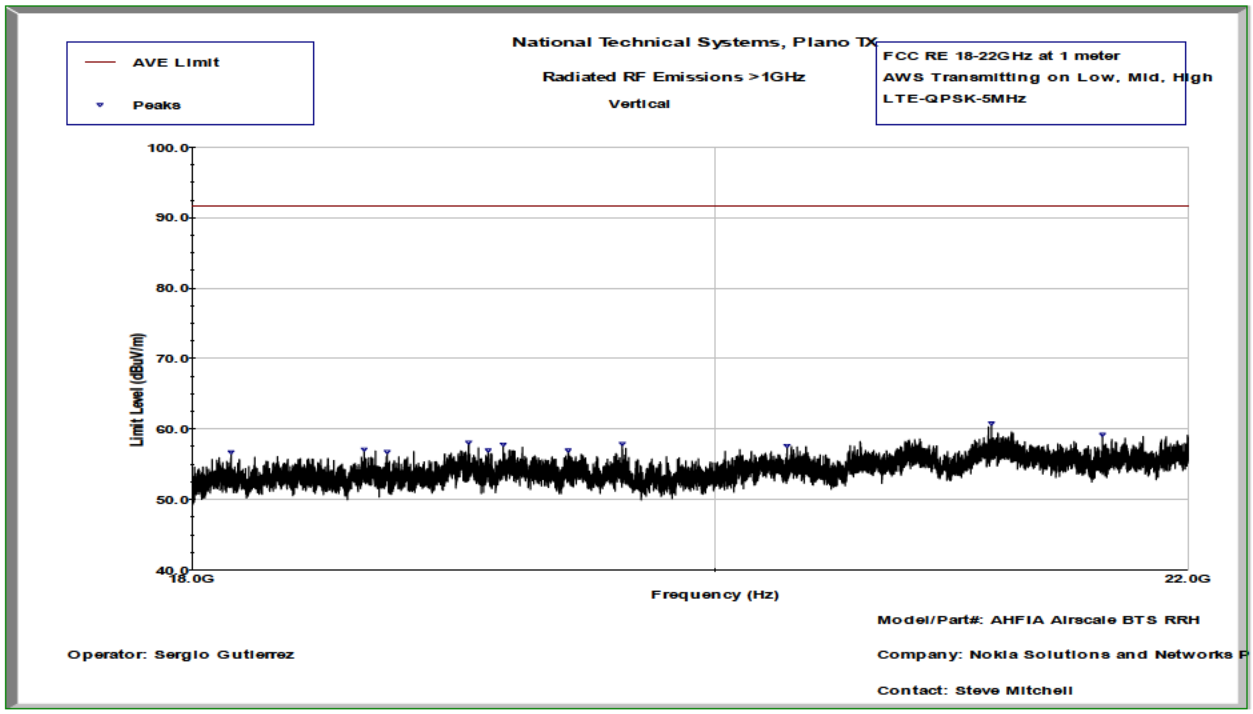
AWS Carriers 10-18GHz – Horizontal at 1m



AWS Carriers 10-18GHz – Vertical at 1m



AWS Carriers 18-22GHz – Horizontal at 1m



AWS Carriers 18-22GHz – Vertical at 1m

Radiated spurious emission plots/measurement results for the second test with the 3GPP Band 25 and the 3GPP Band 66 transmitters enabled simultaneously at 20 watts per carrier (or 40 watts/antenna port) are in Appendix A.

Frequency Stability/Accuracy

Carrier frequency stability of the EUT at extreme temperatures and voltages was measured. The frequency error was measured as follows:

(1) EUT transmitting in 5MHz-QPSK-LTE mode at center channel (2145.0MHz) on port 4.
(2) The EUT temperature was stabilized at each temperature step (for a minimum of 30 minutes) prior to frequency accuracy measurement.

Nominal operating voltage of the product is declared as 48VDC.

Frequency error results are listed below for extreme voltages and temperatures.

Extreme Voltages:

Percentage of Rated Supply	DC Voltage (VDC)	Frequency Error (Hz) at 20°C
85%	40.8	2.22
100%	48.0	2.67
115%	55.2	1.66

Extreme Temperatures:

Temperature	Frequency Error (Hz) at 48VDC
-30 °C	2.79
-20 °C	1.82
-10 °C	2.64
0 °C	**3.14**
10 °C	2.74
20 °C	2.67
30 °C	2.43
40 °C	2.04
50 °C	1.93

Based on the results above, highest recorded frequency error (3.14 Hz or ~0.0015 ppm) ensures that the transmitted signal remains in its authorized frequency block at extreme voltages and temperatures.

The results above are deemed sufficient to demonstrate carrier frequency stability for all other channel bandwidth modes and modulations since all carriers are controlled by the same frequency stabilization circuitry that was subjected to the extreme conditions under this test.